Remarks

Entry of the above-noted amendment, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claim 4 is amended. This amendment to the claims constitutes a bona fide attempt by applicants to advance prosecution of the application and obtain allowance of certain claims, and is in no way meant to acquiesce to the substance of the rejections. Support for the amendment can be found throughout the specification (e.g., page 6, lines 16-23), drawings (e.g., FIGS. 2A-2H and 4A-4H), and claims and thus, no new matter has been added. Claims 1 and 3-30 are pending.

Request for Change of Attorney Docket Number:

Please change the attorney docket number as follows:

LIT-124/GCD 98-25 N00

Claim Rejections - 35 U.S.C. §112, first paragraph:

Claims 1 and 3-30 are rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which allegedly was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. This rejection is respectfully, but most strenuously, traversed.

The Office Action states at paragraph 2, page 2:

> The specification fails to give a clear and full description for determining the coupling ratios of the input couplers and output couplers based on the "first number of input (or output) coupler", the "second number of input (or output) coupler", the "first input coupler", the "second input coupler", the "first output coupler" and the "second output coupler" as recited in claims 1, 4, 21 and 22. The applicant is respectfully noted that specification only gives support for **assigning** certain coupling ratio[] values for the input

> couplers that connect different sensors, (as shown in page 6, lines 16-24), and for **selecting** certain coupling ratio values for the output couplers (as shown in page 5 line 27 to page 6 line 9). No **scheme** of determination based on numbers of couplers, the first and second coupler as set forth in the claims ever been given in the specification. (*Emphasis in original.*)

In this regard, MPEP § 2163.02 states:

> The courts have described the essential question to be addressed in a description requirement issue in a variety of ways. An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). Under *Vas-Cath, Inc. v. Mahurkar*, 935 F.2d 1555, 1563-64, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991), to satisfy the written description requirement, an applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention, and that the invention, in that context, is whatever is now claimed. The test for sufficiency of support in a parent application is whether the disclosure of the application relied upon "reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter." *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 USPQ 177, 179 (Fed. Cir. 1985) (quoting *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983)).

Turning to the limitations cited for claim 1, claim 1 recites, *inter alia*:

> wherein a first number of said output couplers are located between said first output coupler and a signal destination on one of said n return fiber lines, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first output coupler is based on the first number, wherein a second number of said output couplers are located between said second output coupler and the signal destination on the one of said n return fiber lines, wherein the coupling ratio of said second output coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second output coupler is larger than the coupling ratio of said first output coupler;

Exemplary support for these limitations of claim 1 (and analogous limitations in claims 4 and 22) is found in FIGS. 2-2H and 4-4H, as discussed herein, and in the specification at page 6, lines 4-9, as follows:

> In particular, the coupling ratios of the return couplers 330 are selected to be **progressively larger** from the sensor S1 to the sensor S6 (S6 has an effective coupling ratio of 100%) to compensate for the fact that the signals from the sensors S1-S6 pass through **different combinations of couplers**, causing each return signal to have a **different overall transmission** through the return fiber RF1. (Emphasis added for explanatory purposes).

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FIGS. 2-2H and 4-4H disclose support for the cited limitations of claim 1 (and analogous limitations of claims 4 and 22). In one example (among a variety of examples disclosed in FIGS. 2-2H and 4-4H), the "first output coupler" is the output coupler of sensor S2. Thus, one output coupler ("a first number") is located between the output coupler of sensor S2 and the detector D1 ("signal destination") on return fiber line RF1. The first number ("one") is greater than or equal to zero. In one example, the "second output coupler" is the output coupler of sensor S4. Thus, three output couplers ("a second number") are located between the output coupler of sensor S4 and the detector D1 ("signal destination") on return fiber line RF1. The "second number" ("three") is greater than the "first number" ("one"). The coupling ratio ("30%") of the output coupler of sensor S4 is larger than the coupling ratio ("20%") of the output coupler of sensor S2. The coupling ratio ("20%") of the output coupler of sensor S2 is based on the first number ("one") and the coupling ratio ("30%") of the output coupler of sensor S4 is based on the second number ("three") as the first and second numbers determine a relative position of the output couplers on the return fiber line RF1, thus determining a value based on a progressively larger coupling ratio from the sensor S1 to the sensor S6.

So, the specification and drawings reasonably convey to one skilled in the relevant art that the inventors had possession of the invention of claim 1, including the cited limitations of

claim 1, (and the invention of claims 4 and 22, including the analogous limitations of claims 4 and 22) at the filing date of the parent patent application.

Turning to the additional limitations cited for claim 4, claim 4 recites, *inter alia*:

> wherein a first number of said input couplers are located on the first distribution fiber line between the first signal source and said first input coupler, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first input coupler is based on the first number, wherein a second number of said input couplers are located between the first signal source and said second input coupler, wherein the coupling ratio of said second input coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second input coupler is larger than the coupling ratio of said first input coupler;

Exemplary support for these limitations of claim 4 (and analogous limitations in claim 21) is found in FIGS. 2-2H and 4-4H, as discussed herein, and in the specification at page 6, lines 16-23, as follows:

> In each sensor group, a certain fraction of the input optical signal in each distribution fiber line DF1-DF6 is directed (coupled) into the sensors of that group. However, to maintain roughly the same level of input optical power at each sensor, this fraction is higher for sensor groups further removed from the lasers L1-L6, since optical power must be shared among fewer subsequent sensor groups. Thus, the input coupling ratio is chosen to be 7% at sensors S31-S54, 11% at sensors S55-S66, 15% at sensors S67-S72, 20% at sensors S73-S78, 30% at sensors S79-S84, 47% at sensors S85-S90, and 100% at sensors S91-S96 at which point an input coupler is no longer needed.

FIGS. 2-2H and 4-4H disclose support for the cited limitations of claim 4 (and analogous limitations of claim 21). In one example (among a variety of examples disclosed in FIGS. 2-2H and 4-4H), the "first input coupler" is the input coupler of sensor S25. Thus, four input couplers ("a first number") are located between the input coupler of sensor S25 and the laser L1 ("signal source") on distribution fiber line DF1. The first number ("four") is greater than or equal to zero. In one example, the "second input coupler" is the input coupler of sensor S31. Thus, five

input couplers ("a second number") are located between the input coupler of sensor S31 and the laser L1 ("signal source") on distribution fiber line DF1. The "second number" ("five") is greater than the "first number" ("four"). The coupling ratio ("7%") of the input coupler of sensor S31 is larger than the coupling ratio ("3.5%") of the input coupler of sensor S25. The coupling ratio ("3.5%") of the input coupler of sensor S25 is based on the first number ("four") and the coupling ratio ("7%") of the input coupler of sensor S31 is based on the second number ("five") as the first and second numbers determine a relative position of the input couplers on the distribution fiber line DF1, thus determining a relative value of the first and second input couplers.

So, the specification and drawings reasonably convey one skilled in the relevant art that the inventors had possession of the invention of claim 4, including the cited limitations of claim 4, (and the invention of claim 21, including the analogous limitations of claim 21) at the filing date of the parent patent application.

The discussion presented above overcoming the instant rejection of claim 1 also applies analogously to overcoming the instant rejection of claims 4 and 22. In addition, the discussion presented above further overcoming the instant rejection of claim 4 also applies analogously to overcoming the instant rejection of claim 21.

Withdrawal of the §112, first paragraph, rejections is therefore respectfully requested.

Claim Rejections - 35 U.S.C. §112, second paragraph:

Claims 1 and 3-30 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for allegedly failing to particularly point out and distinctly claim the subject matter

which applicants regard as the invention. This rejection is respectfully, but most strenuously, traversed.

1. Issue of "first input coupler" and "second input coupler" or "first output coupler" and "second output coupler."

In regard to the output couplers of claims 1, 4, and 22 and the input couplers of claims 4 and 21, the Office Action states at paragraph 4, page 3:

> [T]he phrases concerning the determination of the coupling ratios for the input coupler and output coupler are confusing and indefinite. It is not clear what are these "first input coupler" and "second input coupler" or "first output coupler" and "second output coupler". Also it is not clear how are these "first number of couplers" and "second number of couplers" determined or how do they relate to each other. It is not clear if these couplers are in the same sensor group or not. It is not clear if these couplers are on the same distribution line or on the same return line or not. The language is so vague and confusing it is not possible to determine the scopes of the claims.

However MPEP § 2173.02 states:

Not met

> The examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. When the examiner is satisfied that patentable subject matter is disclosed, and it is apparent to the examiner that the claims are directed to such patentable subject matter, he or she should allow claims which define the patentable subject matter with a reasonable degree of particularity and distinctness. Some latitude in the manner of expression and the aptness of terms should be permitted even though the claim language is not as precise as the examiner might desire. Examiners are encouraged to suggest claim language to applicants to improve the clarity or precision of the language used, but should not reject claims or insist on their own preferences if other modes of expression selected by applicants satisfy the statutory requirement.

MPEP § 2173.04 states:

> Breadth of a claim is not to be equated with indefiniteness. *In re Miller*, 441 F.2d 689, 169 USPQ 597 (CCPA 1971). If the scope of the subject matter embraced by the claims is clear, and if applicants have not otherwise indicated that they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph.

With respect to the first output coupler, the second output coupler, and the first number of output couplers, claim 1 recites, *inter alia*:

> wherein said output couplers comprise a first output coupler and a second output coupler, wherein a first number of said output couplers are located between said first output coupler and a signal destination on **one of said n return fiber lines**, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first output coupler is based on the first number, wherein a second number of said output couplers are located between said second output coupler and the signal destination on **the one of said n return fiber lines**,... (Emphasis added for explanatory purposes).

With respect to the first input coupler, the second input coupler, and the second number of input couplers, claim 4 recites, *inter alia*:

> wherein said input couplers comprise a first input coupler and a second input coupler, wherein a first number of said input couplers are located **on the first distribution fiber line** between the first signal source and said first input coupler, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first input coupler is based on the first number, wherein a second number of said input couplers are located on **the first distribution fiber line** between the first signal source and said second input coupler,... (Emphasis added for explanatory purposes).

The first output coupler and the second output coupler are on the same return fiber line. A first number of output couplers are located between the first output coupler and the second output coupler on the return fiber line. The first input coupler and the second input coupler are

on the same distribution fiber line. A first number of input couplers are located between the first input coupler and the second input coupler on the distribution fiber line.

The coupling ratio of the second output coupler is related to the coupling ratio of the first output coupler by a relation between the number of output couplers located between the respective second and first output couplers and the signal destination on the one of the n return fiber lines. For example, referring to FIG. 2A of the subject application, the coupling ratio of the output coupler for the sensor S5 is represented as 47%. Four output couplers are illustrated as being located between the output coupler for the sensor S5 and the signal destination on the return fiber line RF1. In addition, the coupling ratio of the output coupler for the sensor S2 is represented as 20%. One output coupler is represented as located between the output coupler for the sensor S2 and the signal destination on the return fiber line RF1.

So, the number of (four) output couplers located between the output coupler for the sensor S5 and the signal destination on the return fiber line RF1 is greater than the number of (one) output couplers located between the output coupler for the sensor S2 and the signal destination on the return fiber line RF1. Furthermore, the coupling ratio (47%) of the output coupler for the sensor S5 is larger than the coupling ratio (20%) of the output coupler for the sensor S2. Applicants respectfully submit that the specification (e.g., page 5, line 11, to page 6, line 9; page 6, line 16, to page 7, line 12) and figures (e.g., FIGS. 2A-2H and 4A-4H) disclose the coupling ratios of the output couplers are related to the number of output couplers located between the particular output coupler and the signal destination on the return fiber line. The discussion presented above with respect to claim 1 and 4 also applies analogously to claims 21-22.

The discussion presented above overcoming the instant rejection of claims 1 and 4 also applies analogously to overcoming the instant rejection of claims 21 and 22.

2. Issue of "a first number of said output couplers are located between said first output coupler and a signal destination on one of said n return fiber lines."

In regard to the signal destination of claims 1, 4, and 22, the Office Action states at paragraph 4, page 3:

> The phrase "a first number of said output couplers are located between said first output coupler and a signal destination on one of said n return line" recited in claim 1 is confusing and indefinite since it is not clear how could the couplers be located between a coupler and a signal?

Claim 1 recites, *inter alia*:

> wherein a first number of said output couplers are located between said first output coupler and a signal **destination** on one of said n return fiber lines,... (Emphasis added for explanatory purposes).

Claims 1, 4, and 22 recite a number of couplers located between a coupler and a signal source or signal destination, not between a coupler and a signal as stated by the Examiner. The signal source in one example is one of the lasers L1-L6. The signal destination in one example is one of the detectors D1-16 or the processing electronics 200.

The discussion presented above overcoming the instant rejection of claim 1 also applies analogously to overcoming the instant rejection of claims 4 and 22.

Withdrawal of the §112, second paragraph, rejections is therefore respectfully requested.

Claims Rejections - 35 U.S.C. §103:

Claims 1, 3-10, and 13-30 are rejected under 35 U.S.C. §103(a) as being unpatentable over Giallorenzi (U.S. Patent No. 4,648,083 to Giallorenzi). This rejection is respectfully, but most strenuously, traversed.

With respect to claims 11-12, the Office Action formulated rejections under only §112, first and second paragraphs, which rejections applicants respectfully submit have been overcome above. So, the Office Action did not formulate a substantive rejection of either of claims 11 and 12. Applicants gratefully acknowledge this implied indication of allowability of claims 11 and 12 over the art of record.

Regarding §103 rejections, MPEP §706.02(j) states:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

MPEP §2143.01 states:

> Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

A "strict observance" of the factual predicates to an obviousness conclusion is required. *Graham v. John Deere Co.*, 383 U.S. 1, 18, 148 U.S.P.Q. (BNA) 459, 467 (1966). Without a motivation to combine references, a rejection based on a prima facie case of obviousness is improper. *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). The level of skill in the art cannot be relied upon to provide the suggestion to combine references. *Al-Site Corp. v. VSI Int'l Inc.*, 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999). The reference teachings must appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification. *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Actual evidence of the teaching, suggestion, or motivation is required and must be clear and particular. *In re Dembiczak*, 175 F.3d 994, 999 (Fed. Cir. 1999).

Applicants respectfully submit that Giallorenzi does not teach or suggest one or more limitations of the invention recited in claims 1, 4, and 22. A careful reading of Giallorenzi fails to teach or suggest, for example, the coupling ratios of the input couplers and the output couplers in the z sensor groups chosen to reduce differences in the returned optical signal power levels, wherein the output couplers comprise the first output coupler and the second output coupler, wherein the first number of the output couplers are located between the first output coupler and the signal destination on one of the n return fiber lines, wherein the first number is greater than or equal to zero, wherein the coupling ratio of the first output coupler is based on the first number, wherein the second number of the output couplers are located between the second output coupler and the signal destination on the one of the n return fiber lines, wherein the coupling ratio of the second output coupler is based on the second number, wherein the second

number is greater than the first number, wherein the coupling ratio of the second output coupler is larger than the coupling ratio of the first output coupler.

In addition, Applicants respectfully submit that Giallorenzi does not teach or suggest one or more limitations of the invention recited in claims 4 and 21. A careful reading of Giallorenzi fails to teach or suggest, for example, wherein coupling ratios of said input couplers and said output couplers are chosen to reduce differences in the returned optical signal power levels, said input couplers in a first sensor group having a first input coupling ratio and said input couplers in a second sensor group having a second input coupling ratio different from said first input coupling ratio, wherein said input couplers comprise a first input coupler and a second input coupler, wherein a first number of said input couplers are located on the first distribution fiber line between the first signal source and said first input coupler, wherein the first number is greater than or equal to zero, wherein the coupling ratio of said first input coupler is based on the first number, wherein a second number of said input couplers are located on the first distribution fiber line between the first signal source and said second input coupler, wherein the coupling ratio of said second input coupler is based on the second number, wherein the second number is greater than the first number, wherein the coupling ratio of said second input coupler is larger than the coupling ratio of said first input coupler

These points have even been conceded by the Office Action (paragraph 6, page 5):

> [T]his reference does not teach explicitly that the coupling ratios for the input couplers and output couplers are determined to reduce the difference in the retu[r]ned optical signal power levels,...

Notwithstanding these admitted deficiencies of Giallorenzi, the Office Action (paragraph 6, page 5) states:

> [V]arying the coupling ratio of an optical coupler to adjust the power levels of fiber lines connected by the optical coupler is standard knowledge in the art.

This justification for modifying Giallorenzi conspicuously fails to identify any express teaching, suggestion, or incentive in the art for making the modification. Applicants respectfully submit, upon review, that Giallorenzi fails to provide the express teaching, suggestion, or incentive.

A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). The teachings of the references must be applied in the context of their significance to a technician at the time without knowledge of the solution. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143 (Fed. Cir. 1995).

> A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. *In re Kotzab*, 217 F.3d 1365, 1369 (Fed. Cir. 2000).

To reach a proper determination under 35 U.S.C. §103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicants' disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicants' disclosure is often difficult to avoid due to the very

nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

Since, as noted above, the justification to modify Giallorenzi is hindsight reconstruction of the results of the present invention, the Office Action's reasoning is actually using the present invention itself as a basis to modify Giallorenzi. This violates the settled principle that a motivation to modify a reference cannot come from the invention itself. *Heidelberger Druckmaschinen A.G. v. Hantscho Commercial Products, Inc.*, 21 F.3d 1068, 1072 (Fed. Cir. 1994).

MPEP §2143.01 states:

> The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990; *emphasis in original*).

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done.

> To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

Since no express teaching or suggestion in the art has been identified for the modification of Giallorenzi, attention must be turned to the reasoning to determine whether the Office Action is convincing regarding whether applicants' claimed invention is obvious. Here, the justification given by the Office Action (paragraph 6, page 5) is nothing more than hindsight restatement of the results of the modification.

> Such modification would have been obvious to one skilled in the art to improve the power distribution and power return in the sensor array arrangement.

This justification is tantamount to stating that "it would be obvious to modify A to have B because it provides A plus B." This line of reasoning cannot be considered "convincing," since it is settled that it is impermissible to simply engage in hindsight reconstruction of the claimed invention, using the claimed invention as a template and selecting elements to fill the gaps.

For all the above reasons, the independent claims presented herewith are believed neither anticipated nor obvious over the art of the record. The dependent claims are believed allowable for the same reasons as the independent claims, as well as for their own additional characterizations.

Withdrawal of the §103 rejections is therefore respectfully requested.

In view of the above amendments and remarks, allowance of all claims pending is respectfully requested. If an additional telephone conference would be of assistance in advancing the prosecution of this application, the Examiner is invited to call applicants' attorney.

Respectfully submitted,

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